

In the Claims

Claims 1-21 are pending and all claims have been rejected. This listing of claims will replace all prior versions, and listings, of claims in the application:

1. A magnetic mass storage memory device comprising:
 - a) a read disk layer having an array of read heads;
 - b) a storage disk layer having an array of magnetic storage elements wherein the read heads ~~associate~~ are associated with at least one a-corresponding storage element on the storage disk; and
 - c) a control circuit to select the desired storage element that controls an orientation of a magnetic field of a corresponding read head, and
 - d) at least one pair of write lines disposed one on either side of the magnetic storage elements and controlled by the control circuit for effecting a change in the orientation of a selected storage element.
2. The memory device according to claim 1, wherein the read head ~~comprising~~ comprises:
 - a) a pinned layer; and
 - b) a ~~free~~ layer.
3. The memory device according to claim 2, wherein the pinned layer has a fixed magnetic orientation.

4. The memory device according to claim 3, wherein the free layer has a variable magnetic orientation.
5. The memory device according to claim 4, wherein the storage element comprising a second free layer.
6. The memory device according to claim 5, wherein the second free layer has a variable magnetic orientation.
7. The memory device according to claim 6, wherein the magnetic orientation of the first free layer is regulated by the magnetic orientation of the second free layer.
8. The memory device according to claim 7, wherein a resistance of the corresponding read head is indicative of a value stored therein.
9. The memory device according to claim 8 wherein the read head is an MR.
10. The memory device according to claim 8 wherein the read head is a GMR.
11. The memory device according to claim 8 wherein the read head is a CMR.
12. A magnetic mass storage memory device comprising:

- a) a read disk layer having an array of read heads, each read head comprising a plurality of magnetic layers;
- b) a storage disk layer having a plurality of conductive lines arranged in at least one pair with an array of magnetic storage elements disposed between the conductive lines in locations corresponding to the read heads; and
- c) a control circuit to select the desired storage element from ~~an~~ the array of magnetic storage elements such that a current through the conductive lines will induce a magnetic field in the selected storage element wherein the induced magnetic ~~field~~ field controls a direction of a magnetic field of at least one layer in the plurality of magnetic layers in the corresponding read head.

13. The memory device according to claim 12, wherein the plurality of magnetic layers comprises ~~comprising~~: a) a pinned layer; and b) a free layer.

14. The memory device according to claim 13, wherein a direction of the magnetic field of the pinned layer is fixed.

15. The memory device according to claim 14, wherein the direction of the magnetic field of the free layer is variable.

16. The memory device according to claim 15, wherein the storage element comprising a second free layer.

17. The memory device according to claim 16, wherein a direction of a magnetic field of the second free layer is regulated by a current through the conducting lines.

18. A method for magnetic writing comprising the steps of: a) selecting a storage element from an array of storage elements on a storage disk layer by a control circuit; b) inducing a magnetic field in the storage element by passing current through a plurality of conducting lines around the storage element, the plurality of lines arranged in at least one pair; and c) controlling the magnetic field orientation of a layer in a corresponding read head by the induced magnetic field.

19. The method according to claim 18 wherein the storage element and the layer in the corresponding read head are magnetically coupled.

20. The method according to claim 19, wherein the read head is a GMR.

21. A method of magnetic reading on a storage device comprising the steps of: a) selecting a magnetic storage element, from an array of magnetic storage elements on a storage disk layer; b) passing current through conducting lines surrounding the magnetic storage element, the conductive lines arranged in at least one pair; c) inducing a magnetic field around the magnetic storage element by the current through the conducting lines; d) setting the direction of magnetization of a second free layer in the storage element and d) controlling a

direction of the magnetization of a free layer in a corresponding read head from an array of read heads on a read disk layer by the induced magnetic field; and e) measuring the resistance of the corresponding read head.